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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/772,173

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Rene E. Kristiansen

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EXAMINER

WANG, QUAN ZHEN

ART UNIT

PAPER NUMBER

2613

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

12/19/2006

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/772,173

Applicant(s)

KRISTIANSEN, RENE E.

Examiner

Quan-Zhen Wang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10,13-16,19-21,25,27,28 and 30-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10,13-16,19-21,25,27,28 and 30-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10/20/06 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “delay element comprising at least one pair of electrodes” must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

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2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: "24". Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 10,13-16,19-21, 25, 27-28, 31-32, 34-35, and 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Admitted Prior Art (APA) figs. 2 and 3 in view of Thomas et al. (U.S. Patent US 5,412,464).

Regarding claims 10 and 16, the APA fig. 2 discloses a method of amplifying optical signals, comprising: transmitting a first optical signal (fig. 2, λ_L) from one (fig. 2, port A) of first and second bidirectional ports (fig. 2, ports A and D) to a first unidirectional port (fig. 2, port B); transmitting the first optical signal (fig. 2, λ_L) from the first unidirectional port (fig. 2, port B) through an amplifier (fig. 2, amplifier 9) to a second unidirectional ports (fig. 2, port C); and transmitting the first optical signal (fig. 2, λ_L) from the second unidirectional port (fig. 2, port C) to one (fig. 2, port D) of the first and second bidirectional ports (fig. 2, ports A and D). The APA differs from the claimed invention in that the APA does not specifically disclose a first coupler and a second coupler connected to the first coupler by a delay element. However, a first coupler and a second coupler connected to the first coupler by a delay element are well known in the art. For example, Thomas discloses a first coupler (fig. 1, coupler 4) and a second coupler (fig. 1, coupler 6) connected to the first coupler by a delay element (fig. 1, delay element 1b). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate a first coupler and a second coupler connected to the first coupler by a delay element, as it is disclosed by Thomas, in the system of the APA in order to obtain a unique signal output from the couplers.

Regarding claim 13 and 19, the APA further discloses transmitting a second optical signal (fig. 2, λ_R) from the first unidirectional port (fig. 2, port B) through the amplifier (fig. 2, amplifier 9) to the second unidirectional port (fig. 2, port C).

Regarding claims 14 and 20, the APA further discloses that the first optical signal is at a first wavelength (fig. 2, λ_L).

Regarding claims 15 and 21, the APA further discloses that the second optical signal is at a second wavelength (fig. 2, λ_R).

Regarding claim 23, the APA further discloses that the step of transmitting the second optical signal (fig. 2, λ_R) from the at least one of first and second bidirectional ports (fig. 2, ports A and D) to the first unidirectional port (fig. 2, port B) inherently comprises delaying the second optical signal (fig. 2, λ_R) and the step of transmitting the first optical signal (fig. 2, λ_R) from the second unidirectional port (fig. 2, port C) to the at least one (fig. 2, port A) of bidirectional ports (fig. 2, ports A and D) inherently comprises delaying the second optical signal (fig. 2, λ_R).

Regarding claim 25, the APA discloses an optical router, comprising: a first bidirectional port (fig. 2, port A) coupled to a first unidirectional port (fig. 2, port B); an amplifier (fig. 2, amplifier 9) coupled to the first unidirectional port (fig. 2, port B) and a second unidirectional port (fig. 2, port C); and a second bidirectional port (fig. 2, port D) coupled to the second unidirectional port (fig. 2, port C). The APA differs from the claimed invention in that the APA does not specifically disclose a delay element coupled to the first bidirectional port and the first unidirectional port. However, a delay element coupled to a first bidirectional port and a first unidirectional port is well known in the art. For example, Thomas discloses a delay element (fig. 1, delay 1b) coupled to a first bidirectional port (fig. 1, port 3) and a first unidirectional port (fig. 1, the port of coupler 6)

Regarding claim 27, the APA further discloses that the optical router further comprising a first optical coupler (fig. 3, coupler 15) coupled to the first bidirectional port (fig. 2, port A) and the second bidirectional port (fig. 2, port B); and second optical

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coupler (fig. 3, coupler 17) coupled to the first unidirectional port (fig. 2, port B) and the second unidirectional port (fig. 2, port C).

Regarding claim 28, the APA further discloses that the amplifier is a unidirectional amplifier (fig. 2, amplifier 9).

Regarding claims 31, 34, and 37, Thomas further discloses that the couplers are 3 dB couplers (fig. 1, couplers 4 and 6).

Regarding claims 32, 35, and 38, Thomas further discloses that the delay element is a difference in distance DL indicating a real MZI difference between the first and second optical couplers (fig. 1; column 3, lines 49-61).

5. Claims 30, 33, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Admitted Prior Art (APA) figs. 2 and 3 in view of Thomas et al. (U.S. Patent US 5,412,464), and further in view of Jutamulia (U.S. Patent US 5,647,032).

Regarding claims 30, 33, and 36, the modified system of the APA and Thomas differs from the claimed invention in that the APA and Thomas do not disclose that the delay element comprising a pair of electrodes. However, a delay element comprising a pair of electrodes is well known in the art. For example, Jutamulia discloses a delay element comprising a pair of electrodes (fig. 8, electrodes 92). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate a delay element comprising a pair of electrodes, as it is disclosed by

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Jutamulia, in the modified system of the APA and Thomas in order to actively adjust the optical delay.

Response to Arguments

6. Applicant's arguments filed on October 20, 2006 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quan-Zhen Wang whose telephone number is (571) 272-3114. The examiner can normally be reached on 9:00 AM - 5:00 PM, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

qzw
12/12/2006


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